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STATE OF CALIFORNIA
DEPARTMENT OF FISH AND GAME

PESTICIDE LABORATORY REPORT

1701 Nimbus Road, Suite F
Rancho Cordova, California 95670

Lab No: P-2547 Date Received: July 22, 2008

E.P. No. L-490-08 Sample: goose livers

Index: 6700 PCA: 58399

To: **Warden Steven Schindler**
Department of Fish and Game
North Coast Enforcement District
20 Lower Ragsdale Drive
Suite 100
Monterey, California 93940

Report Date: August 15, 2008

Remarks

On July 18, 2008, Department of Fish and Game (DFG) Office of Spill Prevention and Response (OSPR) staff in Santa Cruz responded to an incident involving several dead Canada geese *Branta canadensis* in Monterey County, California. Liver samples were analyzed for anticoagulants.

Background

On July 18, 2008, Department of Fish and Game (DFG) Office of Spill Prevention and Response staff in Santa Cruz responded to an incident near a lettuce field near Morro Cojo Slough involving several dead Canada geese *Branta canadensis*. During a necropsy, excessive blood in body cavities was noted without any obvious physical trauma. A fluoroscopic examination of the geese was negative for the presence of radio-dense objects such as bullets, bullet fragments or shotgun pellets. Liver samples were excised and submitted to the Pesticide Investigations Unit (PIU) for anticoagulant analysis. Several more Canada goose carcasses were discovered in the same area in the weeks following the initial loss.

RESULTS OF EXAMINATION

Liver samples were submitted to the Water Pollution Control Laboratory to analyze anticoagulants. Chlorphacinone was detected in each of the six liver samples submitted for analysis (Table 1). No other anticoagulant (brodifacoum, bromadiolone, coumatetralyl, diphacinone or warfarin) was detected. Detection limits for anticoagulants are listed in Table 2. As chlorphacinone is rapidly excreted from the body, it is likely that these residues result from a recent exposure to chlorphacinone.

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Table 1. Chlorophacinone residues in Canada goose livers.

Sample Number	Chlorphacinone (in ng/g, fresh weight)
P2547-1	2177
P2547-2	180
P2547-3	63.8
P2547-4	1592
P2547-5	177
P2547-6	70.0

Table 2. Detection limits of Anticoagulants in Tissue

Anticoagulant	Detection limit (ng/g, fresh weight)
Brodifacoum	0.200
Bromadiolone	0.200
Chlorphacinone	2.00
Coumatetralyl	1.00
Diphacinone	2.00
Warfarin	1.00

Conclusion

Given the presence of chlorphacinone in all six separate samples of individual livers and the extensive internal hemorrhaging observed in the carcasses, it is highly likely that the goose loss in Morro Cojo Slough was the result of chlorphacinone exposure.

Chemical analyses performed by Abdou Mekebri, Chemist, Department of Fish and Game Water Pollution Control Laboratory.

PESTICIDE INVESTIGATIONS UNIT
OFFICE OF SPILL PREVENTION AND RESPONSE

By
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Chemical analysis:	$2472
Assessment and report:	700
Total Cost of investigation:	$3172